

DEMONSTRATION OF SELECTED IMPROVED POTATO (*SOLANUM TUBEROSUM* L) VARIETIES IN ASSOSA ZONE

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ABSTRACT: *The potato (*Solanum tuberosum*) is the third most consumed crop globally behind rice and wheat and it is a versatile crop that can be cultivated in diverse environments. However, yield of potato is reduced due to lack of improved varieties, improper plant spacing and low soil fertility. The aim of this study is to demonstrate and create awareness for farmers about improved potato varieties and its production. The activity was conducted at Bambasi and Assosa Districts. Shonkolla, Belete and Guassa selected potato varieties were planted with the spacing of 75cm and 30cm between rows and plants respectively. Each potato varieties were planted on 10m by 10m plot size. The highest yield was recorded by Shonkolla variety at Bambasi and Assosa Districts. Farmers were selected as first rank Shonkolla variety in terms of marketable tuber yield and total tuber yield. We conclude that Shonkolla potato variety is recommended for Assosa zone. In future recently released potato varieties should have to be evaluated in Assosa Zone.*

KEY WORDS: farmers, potato, varieties, assosa , zone

INTRODUCTION

Potato (*Solanum tuberosum*L.) belongs to the family *Solanaceae* and genus *Solanum*. It is native to South America it has been introduced to Ethiopia in 1859 by a German Botanist called Schimper (Berga *et al.*, 1994). Potato is one of the major world food crops in its ability to produce high food per unit area per unit time Ethiopia is endowed with suitable climatic and edaphic conditions for potato production (Lutaladio and Castaldi, 2009). The crop is also rich in several micronutrients and vitamins, especially vitamin C; a single medium sized potato of 150 g provides nearly half of the daily adult requirement (100 mg) (FAO, 2008).

The decline in yield of potato is affected by a number of factors, including decline in soil fertility, use of low yielding varieties, size of the tuber, planting space, poor agronomic management practices, and poor climatic conditions (Arsenault *et al.*, 2001).

Potato is one of the tuber crop grown in Benishangul Gumuz region whereby the number of farmers growing potato is increasing from time to time in region. The number of farmers growing potato in Benishangul Gumuz region was approximately 3,277 in 2015/16 and increased to 8,359 farmers in 2016/17 (CSA, 2016/17). However, improved potato variety (ies) was not popularized and scale up in Benishangul Gumuz Region. To demonstrate and promote potato production technologies in Assosa Zone and to create awareness about newly released potato varieties in the area.

MATERIALS AND METHODS

Description of study area

The study was conducted in Assosa Zone at Assosa and Bambasi districts on farm at farmers' field and farmers were involved in the released potato varieties selection on their selection criteria. Gender ratio was considered during farmer's selection. About 20 men farmers' and 10 female farmer's men, women and youth farmers were participating during the selection and evaluation process.

Experimental Design

Three potato varieties were replicated across selected farmers' fields. Those varieties were Belete, Guassa and Shonkolla. The plot size was 100m² for each variety. Spacing between plants and rows were used 30cm and 75cm, respectively. Varieties evaluation and selection criteria of farmers were recorded. Rank was used to evaluate the farmers' preference based on their selection criteria. Urea was applied twice at planting time and flowering time whereas P₂O₅ applied at planting time and all other agronomic practices were carried out uniformly as per recommendation. The recommended nitrogen was 110 kg per hector and about 92 kg P₂O₅ per hector were used.

Data Collection

Marketable tuber yield (t ha⁻¹): the weight of tubers, which were free from diseases, insect pests, and greater than or equal to 25 g in weight, was recorded as marketable tuber yield.

Unmarketable tuber yield (t ha⁻¹): the weight of tubers that are diseased and/or rotting ones and small-sized (less than 25 g in weight) was recorded.

Total tuber yield (t ha⁻¹): the sum of tuber yield weights of marketable and unmarketable tubers

RESULTS AND DISCUSSIONS

The highest total tuber yield (22.03 t ha⁻¹) was recorded by Shonkola variety whereas the lowest total tuber yield (14.77t ha⁻¹) was scored by Belete variety (table 2). This result is in line with the finding of Desta and Jemal, (2020) who reported that the highest total tuber yield is scored by Shonkolla variety at Assosa area.

Table 1. Yield of demonstrated potato in Bambsi and Assosa Districts

Bambasi District at Dabus Kebele			
Varieties	MTY(ton/ha)	UMTY(ton/ha)	TTY(ton/ha)
Belete	13.85	0.92	14.77
Shonkola	20	2.03	22.03
Guassa	15.53	2.31	17.84
Assosa District (Amba 14 kebele)			
Belete	12.75	0.85	13.6
Shonkola	18.13	2.03	20.16
Guassa	15.33	1.72	17.05

MTY= Marketable Tuber Yield, UMTY=Unmarketable Tuber Yield, TTY= Total Tuber Yield

In case of Assosa District based on maturity of earliness farmers prefer Guassa variety as compared to the two varieties. The reason is that farmers those haven't the chance to eat any other crops, will use Guassa potato variety. In case of tuber size preference farmers were selected Belete variety for consumption. But, they said that it is not important to plant large sized potato like Belete variety due to it deteriorated before sprout. In terms of marketable, unmarketable and total tuber yield Shonkola variety was selected followed by Guassa variety.

Table 2. Farmers varieties selection in Assosa District at Amba 14 kebele

Varieties	Shonkola		Belete		Guassa	
Parameters	Rank	Score	Rank	Score	Rank	Score
Earliness	III	1	II	2	I	3
Tuber size preferences	II	2	I	3	III	1
Marketable Yield	I	3	III	1	II	2
Unmarketable yield	I	3	III	2	II	1
Yield	I	3	III	1	II	2
Final Scores		12		9		10
Final Ranks	I		III		II	

Scores: low=1, Good=2, Excellent=3

In case of Bamabsi District Guassa variety was selected by farmers due to maturity of earliness as compared to Shonkolla and Belete potato varieties. The reason is that farmers those haven't the chance to eat any other crops in home, will use Guassa potato variety. In terms of tuber size preference farmers were selected Belete variety for consumption. But, they said that it is not accepted to plant large sized potato like Belete variety due to it deteriorated before sprout. Generally, farmers were selected Shonkolla variety in terms of marketable and total tuber yield followed by Belete variety in Bamabsi District at Dabus Kebele.

Table3. Farmers Varieties Selection in Bambasi District at Dabus Kebele

Varieties	Shonkolla		Belete		Guassa	
Parameters	Rank	Score Point	Rank	Score Point	Rank	Score Point
Earliness	III	1	II	2	I	3
Tuber size preference	II	3	I	2	III	1
Marketable Yield	I	3	II	2	III	1
Unmarketable Yield	I	3	III	2	II	1
Yield	I	3	III	1	II	2
Final Scores		13		9		8
Final Ranks	I		II		III	

Scores: low=1, Good=2, Excellent=3



Fig. Performance of potato demonstration in Bambasi District at Dabus kebele

CONCLUSION

Shonkolla variety was selected by farmers at both locations in terms of total tuber yield, and marketable tuber yield. At Dabus kebele in Bambasi District farmers were selected secondly Belete variety followed by Guassa variety while at Amba 14 kebele in Assosa District Guassa variety was selected secondly followed by Belete potato variety. Generally, we concluded that Shonkolla variety was selected in terms of yield and quality by farmers at both locations.

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